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**APPLICATION OF FIBRIN ADHESIVE IN FACELIFT**

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**Extended abstract of a PhD thesis**

**Varna, 2019**

The facelift, as part of aesthetic surgery, does not fundamentally alter the appearance and cannot stop the aging process; however it can significantly slow it down. This surgical procedure is a personal choice for every healthy individual with a positive outlook and realistic expectations for improving their quality of life.

The process of aging takes place at biological and morphological cell level. The changes in the skin in the process of aging are: a change in density and elasticity of tissues, ptosis of tissues, wrinkles formation, changes in adipose tissue, etc. The obvious changes in the skin of the face in this process are the ocular muscle at the level of the lower eyelid, the cell-adipose tissue located above the nasolabial groove, the skin of the neck. The epidermal layer gradually wears away with mitosis decreasing. The superficial layer of the dermis atrophies and collagen fiber disorganization occurs as well as degeneration and the reduction of the elastic fibers. There is also a noticeable dehydration in the body tissue. Wrinkles and folds are the consequence of these changes. The factors that further influence aging of the skin are: heredity, age, weight, smoking, environmental factors, stress, etc. Appropriate surgical rejuvenation of the face restores the original anatomy and therefore naturally gives a younger appearance.

The aim of the study is to compare patients who have been subjected to surgical suture and tissue glue facelift and patients in whom face-lifting was performed by surgical suture and drainage, by analyzing the results obtained by the following indicators: patient age, pain scale, bleeding, edema, recovery period, hematoma, necrosis and subjective complaints - difficulty in mimic, numbness, discomfort, and tension.

**In the medical literature around the world, the analysis of the use of facial adhesives in face-lifting is controversial, so we believe that our research will contribute to validating the view for the benefits of replacing drainage with facial adhesives in face-lifting, thereby achieving bigger satisfaction with the patient as well as shortening the recovery time after the procedure.**

**OBJECTIVES**

1. Analyze the interrelationships between all the parameters studied - the degree of pain, age, bleeding, edema, recovery period, hematoma and necrosis, and subjective complaints (*difficult mimicking, numbness, discomfort, tension*), in which face-lifting with surgical suture and tissue glue was applied.

2. Analyze the interrelationships between all the parameters studied - the degree of pain, age, bleeding, edema, recovery period, occurrence of hematoma and necrosis, as well as subjective complaints (*difficult mimicking, numbness, discomfort, and tension*), in which face-lifting with surgical suture and drainage was applied.

3. Compare the two patient groups and analyze the role of Tissucol-Baxter tissue glue utilization in achieving greater patient satisfaction with surgical procedures.

**MATERIALS AND METHODS**

This prospective, randomized, clinical study was conducted at the Clinic of Plastic Surgery at Clinical University Hospital in Doganovo village during the period 2010-2017 and covered 85 patients. In 50 of them, a facelift with surgical suture and tissue adhesive - Tissucol was performed, and 35 of them were face-lifted with a surgical suture and drainage.

The patients were reviewed and approved for surgical intervention based on inclusion and exclusion criteria previously determined by the plastic surgeon.

**Criteria for inclusion in the survey:** 1. People between the ages of 40 and 70; 2. Patients seeking correction of nasolabial folds in which the depth of wrinkles is scored 3 or 4; 3. Patients with visually symmetrical nasolabial folds; 4. Patients who are able to understand and follow the instructions and tend to be involved during the procedure; 5. Patients who have voluntarily wished the surgical procedure and signed an informed consent form; 6. Patients with an emotional necessity for improving their appearance and achieving a better life accomplishment.

**Exclusion criteria:** 1. Presence of permanent implants (e.g. silicone) in the person’s face within one year prior to the procedure; 2. Treatment with a filler (e.g., calcium hydroxyapatite) in the nasolabial fold area within a year prior to the procedure; 3. The presence of scarring or skin lesions in the nasolabial region that may affect the efficacy of the treatment; 4. Having had anaphylaxis or severe allergy; 5. Too thin or too thick facial skin; 6. In the process of conducting anticoagulant therapy, having a coagulation disorder; 7. Skin or systemic infectious disease; 8. Asthma; 9. Compromised immune system or presence of autoimmune disease; 10. Taking medication that may affect wound healing; 11. Uncontrolled diabetes mellitus, hypertension, renal or cardiovascular disease; 12. Pregnant or breastfeeding women; 13. Patients who do not meet the criteria according to the medical judgment of the head surgeon.

**Clinical contingent.** Included are 85 patients aged 43 to 70 years, divided into 2 groups: **Group I** - 50 women with face-lifting with surgical suture and tissue glue; **Group II** - 35 patients with face-lifting with surgical suture and drainage.

**Treatment algorithm.** We have tracked postoperative pain, bleeding, swelling, recovery duration, hematoma, necrosis, and subjective complaints of patients (difficulty mimicking, numbness, discomfort, tension). To determine the extent of postoperative pain a visual-analog scale of 1 to 10 was used, followed by 1, 7, 14th postoperative day and 1 month post-procedure, at the same interval and indicators: Bleeding - on a scale of 1 to 3; the presence of swellings and hematomas re-evaluated visually on a 1 to 3 graded analog scale, the appearance of skin necrosis measured in centimeters, the tracking of the time required for complete recovery and the presence of subjective complaints - difficulty mimicking, numbness, discomfort, indicated in the patient card completed by the patient.

*Descriptive statistical analysis*. A descriptive analysis was used to characterize the main parameters of the sample and indicators included in the study. The analysis is based on measures of the main tendencies, such as arithmetic mean and non-parametric tests – crosstabulation and chi-squared, when searching for significant differences in the frequency presentation of categorical values. Statistical significance for non-parametric tests is considered to be p ≤ O.05.

*Comparative analysis*. The comparative analysis between the two groups was performed using Paired T-test in couples. The test compares two variable mean values for the patient groups in different tracking periods. The analysis calculates the differences between the variable value for each given case – patient and it measures whether the mean values differ from the null hypothesis, i.e. whether we are faced with a difference upon comparison or not, as well as whether the difference established is statistically significant (p ≤ 0.05).

**RESULTS**

The results from the analysis of the procedures performed in both studied groups have been presented in detail through a descriptive analysis and analysis of inferring relationships. Follow up of the patients was done according to a time scheme, which was prepared in advance: on the 1st, 7th and 14th postoperative day and 1 month after treatment.

The evaluation of the bleeding, edema and hematoma indicators was done in a visual-analogue scale of 1 to 3. Patients’ age in both groups was within the interval of 43-70 years. To make comparison easier, the groups have been labelled **group I** – treatment with tissue glue and sutures, and **group II** – treatment with drainage and sutures.

**Group I – operative treatment with tissue glue and sutures.** 50 patients were included in the group treated with tissue glue and sutures. During the first day of treatment the range of **pain felt** by them varied on the pain assessment scale (from 1 [*low sensation*] to 10 [*strong sensation*]) between 5 and 8, and the mean value of pain felt was 6.36 (SD = 0.63). The larger part of the patients who had been operated on (about 66%) had bleeding. The variation of the visual analogue scale (from 1 to 3) and the relative distribution of the participants showed that the patients with bleeding of 1 on the scale were the biggest part (32%, n = 16), and the rest were distributed on the scale of 2 to 3. About 26% of the patients had mild bleeding ≤ 1 on the visual analogue scale, and no bleeding was observed in 18%. On the first postoperative day, the patients in this group had **edema** marked on the scale as 2 and 3. In regards to the **subjective complaints**, the four indicators of *difficult mimicking, numbness, discomfort, and tension* had the biggest relative share on the first day (32%), followed by *numbness and tension* (24%) and *difficult mimicking, numbness and discomfort* (20%).

On the 7th postoperative day the range of the pain experienced decreased and varied between 2 and 4 on the pain evaluation scale, and the mean value of pain experienced was 2,52 (SD = 0,61). The majority of the patients (74%) in the group had no bleeding, and 26% had mild **bleeding** which ranked less than 1 on the scale of 1 to 3. On the 7th day, **edemas** were evaluated as 2 and 3 on the scale, with the larger relative share (84%) was = 2. On the 7th day, **hematomas** were minimal (36% were marked on the scale as 1) or absent (in 60% of the patients). Only two patients had registered hematomas, marked on the scale above 1. **Skin necrosis** with a size of 1-3 cm and 1-4 cm were observed in two women. The patients’ **subjective complaints** on the 7th day of treatment with tissue glue and sutures varied. On the 7th day, the most complaints were of *discomfort and tension* (68%), followed by *difficult mimicking, numbness and discomfort* (10%) and by the sum total of all indicators *difficult mimicking, numbness, discomfort and tension* (10%).

On day 14 of the treatment, the range of **experienced pain** decreases to 0, varying between 0 and 3 on the pain assessment scale, and the mean value of pain felt was 0,87 (SD = 0,66). No **bleeding** was registered in any of the patients. The **edemas** were reduced on the scale as 0 to 2. The biggest relative part of patients were those for whom this indicator was set as 1 (68%) (on the scale from 1 to 3) and for only 8% of the operated patients in this group it was at 2. 20.4% (11 patients) were fully recovered. **Hematomas** were minimal (0.5 on the visual-analogue scale of 1 to 3), i.e. 98% of the patients had no registered hematomas on the 14th day post-surgery. **Skin necroses** with sizes of 1-3 cm and 1-4 cm were also registered on the 14th day of treatment. Patients’ subjective complaints on the 14th day of treatment with skin glue and sutures significantly decreased. The most complaints registered during this study period were of *discomfort* (66.7%), followed by *numbness and discomfort* (20.5%).

On the first month after the performed facelift, those treated with tissue glue and sutures **experienced pain** ranging between 0 and 1 on the assessment scale, and the mean value of the pain experienced was 0,04 (SD = 0,19), with 96% registering no pain sensation. There were no patients registered with **bleeding**, and the **edemas** were reduced on the scale of 0 to 1. The majority of the patients had no edema (96%), and the relative part of the studied patients with edemas, marked on the scale as 1, was very low (4%). Most patients (97.9%) registered as fully recovered. No **hematomas** were described, with only 2 people registering complaints related to *discomfort* and with discomfort *and numbness*.

**Patient group II – surgical treatment with drainage and surgical sutures.** The group treated with drainage and sutures comprised of 35 patients. During day 1 of the treatment, the range of experienced pain varied between 7 and 10 on the pain assessment scale (from 1 [*low sensation*] to 10 [*strong sensation*]), and the mean value of experienced pain was 8.37 (SD = 0.84). The majority of the patients (around 54.3%) had slight bleeding, which was marked as 0.5 on the visual-analogue scale of 1 to 3. The rest of the patients had bleeding marked as 1 (37.1%) and 1.5 (8.6%). On the first postoperative day, the patients’ **edemas** were marked on the visual-analogue scale as 2 and 3. In this study group, **hematomas** developed in almost all of the patients, with only 2 patients (5.7%) showing no signs of hematomas. Variations in patients’ **subjective complaints** on the 1st postoperative day showed that the largest relative part was that of the four indicators *difficult mimicking, numbness, discomfort and tension* (48,6%), followed by *difficult mimicking, numbness and discomfort* (40%) and *numbness, discomfort and tension* (11,4%).

On the 7th day of therapy, the pain range was reduced and varied between 3 and 5 on the pain assessment scale, and the mean value of the pain experienced was 3,77 (SD = 0.59). Over 80% of the patients had no or very mild bleeding, and for only 14.3% of the patients’ bleeding was marked as 1 on the chart. On the 7th day, the **edemas** in the patients from group II were evaluated on the visual analogue scale as 2 and 3. The relative part of patients with edema = 2 on the chart (45.7%) and patients with edema = 3 on the chart (54.3%) showed slight predominance of the latter. **Hematomas** were registered on the 7th day in the majority of the patients (80%), with those who had not developed hematomas being only 20%. In regards to **skin necroses**, unlike in group I where only two women experienced this issue, the group treated with drainage and sutures (group II) showed more necroses – on 5 of the operated. In terms of **subjective complaints**, the largest relative part was of those with *difficult mimicking, numbness and discomfort* (31.4%), followed by *numbness and tension* (22.9%) and *numbness and discomfort* (20%).

On the 14th day of treatment, the pain range was reduced to 0 and varied between 0 and 4 on the pain assessment scale, and the mean value of experienced pain was 1.42 (SD = 0.88). No **bleeding** was registered in the patients, but **edemas** were still registered for a large part of them, mainly with values of 1 and 2 on the visual-analogue scale (in around 85.7% of patients). No **hematomas** were registered on day 14 post-surgery in those treated with drainage and sutures, and 3 patients were fully recovered (5.6%). In five of the patients operated on in this group, we registered **skin necroses** with sizes of 1 to 5 cm. The **subjective complaints** in group II – with drainage and sutures, on the 14th day of treatment varied. Most were of *numbness and discomfort* (43.8%), followed by *difficult mimicking and numbness* (12.5%) and *numbness, discomfort and tension* (12.5%).

On the first month of follow up in group II the range of experienced pain varied between 0 and 2 on the assessment scale, and the mean value of pain experienced was 0,25 (SD = 0,56), with 80% of the patients registered no pain sensation. No **bleeding** was registered in the patients. No **edemas** were present in most of the patients (80%), and in around 20% it was marked as 1 or 2 on the assessment scale. No **hematomas** or **necroses** were described, and 80% were fully recovered after the procedure. The **subjective complaints** on the 1st month following therapy with drainage and sutures were reduced, with 82.9% of them having no complaints. Amongst the registered complaints, the most common were those of *numbness and discomfort* (5.7%) and *numbness, discomfort and tension* (5.7%).

**Intergroup comparisons.** The comparative analysis between the two groups was performed using a Paired T-test in couples. The test compared 2 variable mean values for the patient groups in different stages of examination. The analysis calculated the differences between the variables’ values for each individual case and tested whether the mean values differed from the null hypothesis, i.e. whether the comparison showed or did not show any differences and whether the established differences were statistically significant (p ≤ 0.05).

*Comparing the mean values of the groups by degrees of pain.* The results of the performed comparisons of the extent of the pain experienced showed similar tendencies. Both groups experienced a reduction in the experienced pain in the course of the therapeutic treatment (from the 1st day until the 1st month of follow u), but the mean value evaluated in the patients treated with tissue glue and sutures was lower during the entire duration of treatment and observation. The differences between groups also showed a statistical significance between the groups from the 1st to the 14th day of treatment, the largest difference being on the 1st (t = -12.2, p = 0,001) and on the 7th day (t = -7.52, p = 0,001). No statistically relevant difference in the amount of pain experienced was established on the 1st month, despite the mean values of pain experienced being lower in group I – those treated with tissue glue and sutures (average pain = 0,05), compared to group II – treated with drainage and sutures (average pain = 0,25) (t = -1,87, p = 0,07).

*Comparing the mean values of the groups regarding the degree of bleeding.* Bleeding was observed in both groups only during the first two treatment and observation periods – day 1 and day 7. On the 1st day of treatment, more patients in group I had bleeding (0.97), compared to the patients from group II (0.77). This difference, however, changed direction, as on day 7 it was in group I, treated with tissue glue and sutures, that fewer patients with bleeding were registered. The differences between groups showed a statistical relevance on the 7th day (t = -3.43, p = 0,002).

*Comparing the mean values of the groups with developed edemas.* The results from the comparisons done in regards to the development of edemas showed similar tendencies. In both groups, edemas decreased (from the 1st day to the 1st month), but the average frequency of developed edemas measured amongst the patients treated with glue and sutures was lower during all treatment and observation periods. The intergroup differences also demonstrated a statistical significance from the 7th (t= -3.17, p=0.003) to the 14th day (t= -4.46, p=0.001) of treatment and follow up. No statistically relevant difference was established on the 1st day of treatment (t= -0.72, p=0.475), nor on the 1st month, although the mean values of developed edemas in group I, treated with tissue glue and sutures, were lower (0.05) compared to group II – treated with drainage and sutures (0.28) (t = -1.96, p = 0.058).

*Comparing the groups’ mean values of hematomas formed.* Hematoma development were observed in both groups only during the first two periods of treatment and observation – day 1 and 7. On the 14th day, hematomas were registered in those treated with tissue glue and sutures, but not in group II, treated with drainage and sutures. During the 1st day of treatment, there were more patients with haematoma in group I – treated with tissue glue and sutures (0.74), compared to the patients from the group treated with drainage and sutures (0.64). During the treatment process, however, this difference inversed. During the second observational period – day 7, less hematomas were registered in the patients from the group treated with tissue glue and sutures, and during the third observational period this difference melted away and no hematomas were observed amongst those treated with drainage and sutures. During the first month of follow up, the patients from both groups had no hematomas. The differences between the groups in regards to the hematomas developed during treatment did not turn out to be statistically significant during the comparisons tested for all observation periods – from the 1st to the 14th day.

**DISCUSSION**

Facelift is considered to be a safe and effective procedure to preserve a youthful appearance, to which an increasing number of patients have resorted. Like any surgical procedure, however, it hides risks of complications and adverse side effects. The most likely complication is the hematoma. The degree of hematoma formation cited in literature varies significantly – between 1.86% and 9%. Hematoma (especially large ones) can lead to tissue necrosis, protracted recovery due to edema and ecchymosis, hyperpigmentation and reduced patient satisfaction. The attempts at reducing hematoma following rhytidectomy have varying degrees of success. Some of them involve using drainages and autologous plasma rich in thrombocytes. Others turn to applying fibrin tissue adhesives to reduce hematoma, but literature data on the benefits of its use are inconsistent, despite more being written on this subject in recent years. In the two groups of patients followed up by us - who had undergone rhytidectomy, group I – 50 patients were treated surgically with tissue glue and sutures, and group II (35 patients) – with sutures and drainage. The data we found showed promising results in regards to the use of tissue glue and sutures for reducing adverse side effects (ex. hematoma, edema), for reducing postoperative pain, for achieving a shorter stay in hospital, faster recovery following the procedure and for reducing the subjective complaints of patients who had undergone such a procedure. In the first postoperative day, the pain experienced by the first tracked group varied between 5 and 8 on the assessment chart, and the mean value of the pain experienced was 6,36. The greatest part of patients with bleeding were those in the scale of 1 (32%), and the rest were distributed on the scale in a range of 2 to 3. Around 26% of the patients had mild bleeding – less than 1 on the scale, and 18% of the patients had no bleeding whatsoever. The edema in patients of this group on day 1 was marked on the visual-analogue scale between 2 and 3. Patients’ subjective complaints on day 1 varied, with the highest number during this day being those of the four indicators: difficult mimicking, numbness, discomfort and tension (32%), followed by numbness and tension (24%) and difficult mimicking, numbness and discomfort (20%). In the second followed up group – patients treated with drainage and sutures, during the 1st postoperative day the pain experienced varied between 7 and 10 on the assessment scale, and the average value of experienced pain was 8,37. The majority of the patients (around 54.3%) had mild bleeding, which was marked as 0.5 on the visual-analogue scale of 1 to 3. The bleeding of the other patients was assessed as 1 (37.1%) and 1.5 (8.6%) on the visual-analogue scale. The edema in patients from group II on day 1 was marked on the visual-analogue scale as 2 and 3. In the group, almost all of the patients developed hematomas, with only 2 patients (5.7%) having no hematomas. The subjective complaints of patients in group II varied on the 1st day, with most of them being of the four indicators of difficult mimicking, numbness, discomfort and tension (48.6%), followed by difficult mimicking, numbness and discomfort (40%) and numbness, discomfort and tension (11.4%). On the 7th postoperative day in group I the experienced pain decreased and varied between 2 and 4 on the pain assessment scale, while the average amount of pain experienced was 2,52. The majority of the patients (74%) had no bleeding, and in 26% it was very mild, marked as less than 1 on the visual-analogue scale. The edema in patients from group I on the 7th day was marked on the visual-analogue scale as 2 and 3, and it was lighter (on the chart = 2) in the majority of the patients (84%). Hematomas on day 7 were minimal (36% marked on the chart as 1) or lacking (for 60% of the patients), with hematomas marked on the chart above 1 registered in only two patients. Skin necroses were observed in two patients, with sizes of 1-3 cm and 1-4 cm. Patients’ subjective complaints on day 7 of treatment with tissue glue and suture varied, with the majority of the complaints on the 7th postoperative day being of discomfort and tension (68%), followed by difficult mimicking, numbness and discomfort (10%) and all indicators together – difficult mimicking, numbness, discomfort and tension (10%). In the second group, treatment was also successful on the 7th day of observation. The amount of pain experienced decreased on the 7th day in group II as well, with variations between 3 and 5 on the pain assessment scale, and its average value was 3.77. Over 80% of the patients had no or mild bleeding, and only 14.3% of patients had bleeding marked as 1 on the visual-analogue scale. On the 7th day, the edema of the patients from this group was marked on the visual-analogue scale as 2 and 3, with the persons with edema rated at 3 being prevalent – 54.3%, compared to those marked at 2 – 45.7%. Hematomas on the 7th day were registered in 80% of the patients and only 20% had no hematomas. Unlike those treated with tissue glue and suture, where only 2 patients had skin necrosis, in the group with drainage and sutures necroses arose in 5 people. On the 7th postoperative day patients with drainage and suture’s subjective complaints varied, but the most common ones were those of difficult mimicking, numbness and discomfort (31,4%), followed by numbness and tension (22,9%) and numbness and discomfort (20%). In group I on the 14th day of treatment the experienced pain was reduced to 0 and varied between 0 and 3 on the pain assessment scale, and the mean value of pain felt was 0.87%. There was no bleeding registered in any of the patients, and the edema was reduced to values between 0 and 2 on the chart. The higher relative part (68%) was that of patients with edema levels of 1, and in very few patients (8%) it was rated 2 on the visual-analogue scale. For 20.4% (11 patients), the recovery was complete. Hematomas were minimal (0.5), i.e. 98% of the patients registered no hematomas on the 14th day of treatment. Two patients with skin necroses with sizes of 1-3 cm and 1-4 cm were registered on the 14th day of treatment and follow up. Patients’ subjective complaints during this period of treatment with tissue glue and suture were significantly reduced. The most complaints on day 14 were of discomfort (66.7%), followed by numbness and discomfort (20,5%). In group II too, patients’ recovery was going well on the 14th postoperative day. The range of experienced pain on day 14 of treatment was also reduced to 0 in many of the patients, however it varied between 0 and 4 on the pain assessment scale, and the mean value of pain felt was 1,42. There was not registered bleeding in patients, but edema was still registered amongst many of the patients, mostly with marks of 1 and 2 on the visual-analogue scale (about 85.7% of the patients). There were not registered hematomas on the 14th day of treatment with drainage and suture, and three patients were fully recovered (5.6%). Skin necroses were noted in 5 women, with sizes of 1 to 5 cm. The patients in group II’s most common subjective complaints on the 14th day of treatment were of: numbness and discomfort (43.8%), followed by difficult mimicking and numbness (12.5%) and numbness, discomfort and tension (12.5%). On the first month of the patients’ treatment with tissue glue and suture, the pain experienced varied between 0 and 1 on the pain assessment scale, and its mean value was 0.04, with 96% of the patients in group I registering no pain sensation. No bleeding was registered in any of the patients. For the majority of the patients, there was no edema (96%), and a very small relative part (4%) presented with edema rated as 1, according to the scale applied. 97.9% of patients registered a complete recovery. No hematomas were described, with only two people having complaints related to discomfort and discomfort and numbness. The patients in group II’s progress was just as successful, yet with slightly weaker indicators. On the first postoperative month, the pain experienced by patients treated with drainage and suture varied between 0 and 2 on the pain assessment scale, and its mean value was 0.25. In 80% of the patients there was no registered pain sensation. No patients were found to have bleeding either, and the edema had decreased, but maintained its levels from the values marked on day 14 of treatment on the scale of 0 to 2. There was no edema in most of the patients (80%), and in around 20% of this group it was either a 1 or a 2 on the visual-analogue evaluation scale. No hematomas or necroses were described, and patients’ recovery on the first month of treatment was 80%. During the first postoperative month, the patients treated with drainage and suture’s subjective complaints had decreased, with 82.9% of them having no complaints. Amongst the registered complaints, the majority were of numbness and discomfort (5.7%) and numbness, discomfort and tension (5.7%). The results from the comparisons made in our study on experienced pain levels showed similar tendencies. In both groups, the patients experienced less pain during the course of treatment (from the 1st postoperative day to the 1st month), but the mean value of pain assessed in those treated with glue and suture was lower during all therapeutic and observation periods. The inter-group differences reached a statistical significance for the separate indicators from the 1st to the 14th day of treatment, with the biggest difference being on the 1st (t = -12.2, p = 0.001) and the 7th day (t = -7.52, p = 0.001) of follow up. No statistically significant difference in the amount of pain experienced was established on the 1st month, although the mean values of pain felt were less in group I, treated with tissue and suture (mean pain = 0,05), compared to those treated with drainage and suture (mean pain = 0,25) (t = -1,87, p = 0,07). Bleeding was observed in both groups only during the first 2 treatment and observation periods – day 1 and 7. During the first postoperative day more patients with bleeding were registered in group I, treated with glue and suture (0.97), than in group II – treated with drainage and suture (0,77). During the course of following up, however, this difference inversed. During the second observation period – day 7, less bleeding was noted in the patients in group I, treated with tissue glue and suture. The results of the comparisons made on the developed edema showed similar tendencies. In both groups, the edema decreased (from the 1st postoperative day until the end of the 1st month), but the mean measured value of edema developed in patients with tissue glue and suture was lower during all treatment and observation periods. The differences between the groups showed statistical significance in follow up in time – from the 7th (t = -3.17; p = 0,003) to the 14th day of therapy (t = -3.46; p = 0,001). In regards to the development of edema, no statistically significant difference was established on the 1st postoperative day (t = -0.72 p = 0,475), nor on the 1st month, despite the mean values of edema development in the group treated with tissue glue and suture being lower (0.05), compared to those treated with drainage and suture (0.28) (t = -1.96; p = 0,058). Hematoma development was observed in both groups only in the initial treatment and observation periods – day 1 and day 7. On the 14th day hematomas were observed in those treated with tissue glue and suture, but not in the group with drainage and suture. During the 1st day of therapy, more patients with hematomas were observed in group I, treated with tissue glue and suture (0.74), compared to the patients in group II, treated with drainage and suture (0,64). During the process of therapy, however, this difference inversed. During the second observation day – day 7, less hematomas were observed in the group with tissue glue and suture, but during the third period this difference melted away and no hematomas were observed in those treated with drainage and suture. During the first month after the patients’ surgical intervention, both groups showed no hematomas. The differences between the groups in regards to the hematomas developed during treatment reached no statistical significance in the comparisons for all treatment periods – from the 1st until the 14th day. These results were in unison with the meta analysis data of S Giordano et al., who compared the results from the application of tissue glues from 13 performed studies, with a total of 2434 patients involved. The frequency of the hematoma was the primary endpoint of this analysis, and the secondary endpoint were: volume of wound drainage, presence of edema, ecchymosis, seroma, skin necrosis and hypertrophic scarring. They established a statistically significant reduction of the postoperative hematoma and wound drainage with the use of tissue glue, as well as a significant decrease in edema, which was also confirmed by the results obtained from our study.

**CONCLUSIONS**

In our study, we compared face-lifting performed in two groups of patients by applying tissue glue and suture to the **first**, and suture and drainage to the **second**. During the study we followed up certain indicators – bleeding, edema, recovery period, hematoma, necroses and subjective complaints, such as difficult mimicking, numbness, discomfort, tension. During the postoperative period we established that patients who had tissue glue and suture applied experienced less pain during the entire recovery period, despite having similar tendencies as the other group. Only during the 1st day did the patients from the group with tissue glue and suture experience stronger bleeding, which inversed in the remaining tracking periods, compared to the group with drainage and suture. The edema in both groups decreased, but the frequency of developed edema for those using tissue glue and suture was lower. Hematomas developed in both groups, but after the 14th day of the surgical intervention, hematomas were only observed in the group with tissue glue and suture. The appearance of skin necroses during the recovery period, however, was twice as common in patients with suture and drainage. Subjective complaints, such as numbness and discomfort, were less in patients treated with tissue glue and suture after the first month, and the percentage of completely recovered patients was higher. In our study, we have established that the use of tissue glue in face-lifting is an appropriate alternative to drainage. The benefit to the patients is clear, but contemporary aesthetic surgery is still discussing the matter due to the high cost of tissue glues, the surgeons’ abilities, the properties of the different glues and the individual requirements and specifics of the patients.